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CUTTER GUARD

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This invention relates to a milling cutter guard for use during mounting and dismounting a cutter on a machine and for transporting and storing a cutter under protected conditions.

Various means or shields have been employed heretofore to attempt to protect multiple blade cutters, however, the several devices of the prior art have not proven entirely satisfactory inasmuch as they have fallen into disuse and the cutters are being presently protected in industry in wooden boxes and by wrapping them in cloths or rags.

With the foregoing in view, the primary object of the invention is to provide a milling cutter guard which is simple in design and construction, inexpensive to manufacture, easy to place on a cutter, and easy to remove from the cutter assembly.

An object of the invention is to provide a cutter guard having a split spring steel band for opening the band to receive a cutter therein and for the purpose of gripping the cutter via the spring tension of the band.

An object of the invention is to provide shoe portions on the band for forming a protective shroud relative to the cutter to protect both the radially extending and axially extending portions of the cutter blades.

An object of the invention is to provide tongues lanced out of the guard shoe portions for the purpose of mechanically interconnecting with the spring steel band so that it is not necessary to destroy the uniformity of the band by welding, riveting, or perforating and so that the shoe portions are slidably positionable on the bands so as to locate them accurately in spaced relationship in conjunction with various size bands.

An object of the invention is to provide shoe portions on the band which are connected thereto via a flexible bond or connection.

An object of the invention is to provide tongue portions on the shoe portions interlocking with the band in forming a resilient bond between the shoe portions and the band so that it is possible for the shoe portions to move slightly relative to the band in expanding and in contracting the band so as not to bind the flexibility of the band and to permit homogeneous spring action in the band in opening and closing.

An object of the invention is to provide a cutter guard which constitutes stacking and holding means incident to the cutters in stacked relationship.

An object of the invention is to provide shoe portions on the cutters which are angled inwardly so as to eliminate interference between the shoe portions and to prevent a web being formed between the shoe portions in the dipping to place a plastic skin over the shoe portions and the band.

An object of the invention is to provide a plastic protective skin over the shoe portions and bands so as to provide a cushion for the cutter blades during transportation and storage and to provide a cushion for the workman's hands in handling the cutter such as in mounting and dismounting a cutter on a machine.

An object of the invention is to provide a plastic skin over the shoe portions and the band which interlocks with the band and shoe portions so as to hold the shoe portions relative to the band in properly spaced relationship thereto.

An object of the invention is to provide a plastic skin over the shoe portions and band which is capable of flexing and moving with the band and shoe portions.

These and other objects of the invention will become apparent by reference to the following description of a cutter guard or shroud embodying the invention taken in connection with the accompanying drawing in which:

Fig. 1 is a top plan view of a cutter guard embodying the invention.

Fig. 2 is a cross-sectional view of two cutters equipped with the inventive cutter guard in stacked relationship.

Fig. 3 is a perspective view of a portion of an inventive cutter guard showing the spring band and shoe connection prior to the application of the plastic skin.

Fig. 4 is a cross-sectional view of Fig. 3 taken on the line 4—4 thereof showing the tongues lanced from the shoe portion in the extended position prior to being pressed down over the band; and

Fig. 5 is a cross-sectional view of the guard similar to Fig. 4 showing a bonding agent fixing the shoe portion with the band portion.

Referring now to the drawing wherein like numerals refer to like and corresponding parts throughout the several views, the cutter guard disclosed therein to illustrate the invention comprises a spring band **10** which is split as at **11**, shoe portions **12** having toe portions **13** and heel portions **14**, and a plastic skin **15** enveloping the band **10** and shoe portions **12** in a completely enveloping protective coating providing a cushion for both the cutter blades and the workman's hands.

More particularly, the spring steel band **10** is split as at **11** so as to be capable of expanding to receive a cutter and of then contracting to grip a cutter; the shoes **12** have an arcuate body portion **16** from which the tongues **17** and **18** initially are lanced outwardly thereof in the position seen in Fig. 4 prior to the insertion of the band **10**. The band **10** is inserted between the lanced out tongues **17** and **18** and the tongues are pressed down over the band so as to hold the shoe **12** on the band in proper relationship and it is to be noted that the shoes can then be slid along the band to evenly space the shoes relative to the band as seen in Fig. 1. This is an important element due to the fact that the size of cutters vary greatly so that it is necessary to size the band **10** to the cutter to which it is to be applied and then place as many shoe portions **12** thereon as possible without crowding or overlapping; in this connection it can be easily seen that the sliding relationship between the shoe **12** and the band **10** provides facility for easily, properly, and evenly spacing the shoes **12** relative to each other on the band so that it is not necessary to have different size shoes for different size cutters.

The guard seen in Fig. 5 employs a bonding agent **19** between the band **10** and the shoe **12** which may be of any metal bonding type such as "Cycle-Weld" which is sold commercially. Handles **21** can be fastened adjacent on the band **10** adjacent the split **11** as seen in Figs. 1–3, providing a hand grip for expanding the band in mounting the guard on a cutter **22** assembly. The shoe toe portions **13** are relieved or angled inwardly so as to avoid interference with one another and the heel portions **14** are also angled inwardly to avoid interference and so that in dipping no web forms between the various shoe portions.

It is also within the purview of the invention to provide a temporary bond such as the bond **19** between the shoes **12** and the band **10** for the purpose of holding the shoes